

What is claimed is:

1. An apparatus for manufacturing pre-formatted linear optical data storage media including an elongated linear polymer layer, comprising:

a drum mounted for rotation about a rotation axis, and including a circumferential outer surface having a predetermined pattern of protrusions for embossing at least one pattern of optically readable embossments in an elongated linear polymer layer rolled on the drum; and

a radiation source for causing the pattern of optically readable embossments of the elongated linear polymer layer to solidify prior to the embossments being removed from the protrusions of the outer surface of the drum.
2. An apparatus according to claim 1, further comprising a dispenser for dispensing a liquid between the outer surface of the drum and an elongated linear polymer layer rolled on the drum.
3. An apparatus according to claim 2, wherein the dispenser contains a chemical for softening the surface of the polymer layer, and wherein the radiation source provides heat for causing the pattern of optically readable embossments of the elongated linear polymer layer to solidify.
4. An apparatus according to claim 2, wherein the dispenser contains a liquid polymeric material that can be hardened by radiation of a predetermined wavelength, and wherein the embossments are made in the liquid polymeric material and the radiation source provides radiation of the predetermined wavelength.
5. An apparatus according to claim 1, further comprising backing rollers pressing the elongated linear polymer layer against the drum.

6. An apparatus according to claim 1, further comprising a vacuum chamber containing deposition sources for applying an optical recording layer covering the pattern of optically readable embossments of the elongated linear polymer layer, and wherein the vacuum chamber is adapted to receive the embossed elongated linear polymer layer.

7. An apparatus according to claim 1, further comprising deposition sources for applying an optical recording layer over the pattern of optically readable embossments of the elongated linear polymer layer.

8. An apparatus according to claim 7, further comprising an optical head array adapted to write recording marks in the optical recording layer over the pattern of optically readable embossments.

9. An apparatus according to claim 1, wherein the protrusions of the drum comprise ridges and bosses.

10. An apparatus according to claim 1, wherein the protrusions of the drum form a pattern of optically readable embossments providing header information, servo and error correction information, pre-recorded digital information, and pre-recorded analog information.

11. A method for manufacturing pre-formatted linear optical data storage media including an elongated linear polymer layer, comprising:

softening a surface of an elongated linear polymer layer;

embossing at least one pattern of optically readable embossments in the softened surface of the elongated linear polymer layer using a drum having protrusions;
and

hardening the embossed surface of the elongated linear polymer layer prior to removing the linear polymer layer from the drum.

12. A method according to claim 11, further comprising dispensing a softening agent onto the surface of the polymer layer to soften the surface prior to embossment, and then hardening the embossed surface by heating.

13. A method according to claim 11, wherein a liquid polymeric material that can be hardened by radiation is applied to the surface of the polymer layer, and wherein the embossments are made in the liquid polymeric material, and then radiation of an appropriate wavelength is applied the liquid polymeric material after embossing to cause the liquid polymeric material to become solid.

14. A method according to claim 11, further comprising applying an optical recording layer over the pattern of optically readable embossments of the elongated linear polymer layer.

15. A method according to claim 14, further comprising forming recording marks in the optical recording layer.

16. A method according to claim 14, wherein the optical recording layer comprises a dielectric layer, a phase change recording layer, and a reflection/thermal control/nucleation layer.

17. A method according to claim 11, wherein the pattern of optically readable embossments comprise lands and grooves, and wherein side walls of the grooves are wobbled for tracking purposes.

18. A method according to claim 11, wherein the optically readable embossments provide header information, servo and error correction information, pre-recorded digital information, and pre-recorded analog information.

19. A method according to claim 11, wherein a recordable layer is embedded into the polymer layer simultaneous with the embossment.

20. An apparatus according to claim 2, wherein the dispenser contains a dye for embedding a recordable layer into the polymer layer simultaneous with the embossing.